Amendments to the Specification

Please add the following new heading before paragraph [0001]:

FIELD OF THE INVENTION

Please add the following new heading before paragraph [0002]:

BACKGROUND

Please replace paragraph [0002] with the following amended paragraph:

[0002] A method ~~according to the definition of the species set forth in claim 1~~ for automatically controlling a production process for the series production of order-specific products, the production process including a first and a second subprocess; a sequence of orders existing in electronic form being generated for products that are manufactured in the production process; a sequence of production objects being manufactured in the first subprocess in accordance with the order sequence; a selection process being carried out, in which a production object of the production-object sequence and an order of the order sequence, which match one another, are selected; from the selected production object in the second subprocess, a product being manufactured in accordance with the selected order; and the selection process and the product manufacturing being repeated until a product is manufactured for each order of the order sequence; is known from the German Patent Application DE 199 27 563 A1. It discusses separating the production-object sequence from the order sequence. In a first subprocess, which it refers to as production step, a sequence of production objects is manufactured according to the order sequence. Each production object, called product in this case, is produced on the basis of an order from the order sequence. After cycling through the first subprocess, each production object is temporarily assigned the same or a different order. In this way, a production object and an order are selected for the second subprocess. A work order is generated for the second subprocess to process the selected production object in accordance with the selected order, and is processed when the production object cycles through the second subprocess.

Please add the following new heading before paragraph [0005]:

SUMMARY OF THE INVENTION

Please replace paragraph [0007] with the following amended paragraph:

[0007] The object of the present invention is to devise a method ~~in accordance with the definition of the species set forth in claim 1~~for automatically controlling a production process for the series production of order-specific products, which will result in fewer orders being delivered to the second subprocess behind schedule.

Please delete paragraph [0008].

Please replace paragraph [0017] with the following amended paragraph:

[0017] One preferred specific embodiment provides for the production object to be removed from the sorting buffer again, if this is possible. In this way, a space is once again made available. For that reason, it is preferably the production objects in the sorting buffer that are first compared to the first order of the order sequence, and, only then, the production objects of the production-object sequence. In a selection process ~~as set forth in claim 6~~ according to one possibility, if the first order of the order sequence matches a production object in the sorting buffer, the first order and the production object are selected. The production object is then removed from the sorting buffer.

Please replace paragraph [0018] with the following amended paragraph:

[0018] In accordance with ~~the embodiment of claim 7~~ another possible embodiment of the invention, if an insufficient number of free spaces is available or if no production object matching the first order is found, then the order is not selected, but deferred. An initially empty electronic buffer memory for orders is created for deferring orders. If the matching production object cannot be moved up to the first position, the first order is placed in this buffer memory.

Please replace paragraph [0020] with the following amended paragraph:

[0020] In accordance with one preferred specific embodiment, priority is given to searching for a matching production object for an order that had been deferred by placing it in the buffer memory. This has the effect that orders are deferred for only the shortest time needed and that they remain in the buffer memory for only the fewest possible selection processes. ~~As set forth in claim 8~~, According to this preferred embodiment, it is first checked whether an order in the buffer memory matches a production object in the sorting buffer. If this is the case, the order and

the production object are selected. The order is removed from the buffer memory, and the production object is removed from the sorting buffer. If no production object in the sorting buffer matches an order in the buffer memory, an order in the buffer memory and a matching production object in the production-object sequence are selected. If the matching production object is not the first of the sequence, it is moved up to the first position with the aid of the sorting buffer. The order is removed from the buffer memory. The selection process and move-up operation are only carried out if a sufficient number of free spaces is still available in the sorting buffer. Otherwise, the order in the buffer memory is not selected.

Please replace paragraph [0021] with the following amended paragraph:

[0021] When a plurality of orders resides in the buffer memory, several embodiments of the specific embodiment ~~according to claim 8~~ as described in the preceding paragraph stipulate whether - and if so, how - one of these is selected. If the sorting buffer has a maximum number of available spaces, an order matching a production object of the production-object sequence that may be moved up to the first position, is sought. If a plurality of such orders resides in the buffer memory, the one having the longest dwell time will be selected, for example, or that order whose selection will entail the fewest processes for placing the same in the sorting buffer. In accordance with ~~the embodiment as recited in claim 9~~ another possible embodiment, a maximum number of selection processes is specified, for example on the basis of a requirement for the maximum delay allowed to complete an order. An order in the buffer memory is selected when the number of selection processes during which this order has remained in the buffer memory, reaches or exceeds the specified maximum number. In this case, the order is selected, even if another order in the buffer memory matches a production object in the sorting buffer or entails fewer processes for placing the same in the sorting buffer.

Please replace paragraph [0022] with the following amended paragraph:

[0022] The specific embodiments of the method described so far provide for an order to be placed in the buffer memory only when the number of free spaces available in the sorting buffer does not suffice for a matching production object of the production-object sequence to be moved up to the first position. Otherwise, the first order and a matching production object are selected. ~~The embodiment according to claim 10~~ Another possible embodiment of the invention takes into consideration that it is more expensive and time-consuming to place a production object in the

sorting buffer than it is to place an order in the electronic buffer memory. For that reason, ~~in accordance with claim 10~~, the first order of the order sequence is already placed in the buffer memory when the first order neither matches a production object in the sorting buffer nor the first production object of the production-object sequence. The second order is then compared to the production objects in the sorting buffer and to the first production object of the production-object sequence, and so forth.

Please replace paragraph [0024] with the following amended paragraph:

[0024] One embodiment of the method according to the present invention provides for using simulations in advance, to determine the sizing of the sorting buffer. ~~As set forth in claim 17,~~ In this possibility, various possible values are predefined for the maximum number of available spaces in the sorting buffer for production objects. In the case that the effects a sorting buffer has to begin with are to be additionally determined by simulations, the value 0 is predefined as one of the possible values for the simulations. In the simulations, a determination is made for each possible value as to what effects a sorting buffer having such a value as a maximum number of available spaces would have on a reference sequence of orders and production objects.

Please replace paragraph [0029] with the following amended paragraph:

[0029] Simulations are substantially less expensive and can be performed more rapidly than tests using real production objects. Since simulations are performed in advance, a properly sized sorting buffer is used. One avoids using too small of a buffer, which could lead to too many orders being deferred. On the other hand, a sorting buffer that is larger than necessary often consumes too much capital and takes up too much space. ~~The method as recited in claim 17~~ Another possible embodiment of the invention describes an objective and reproducible procedure for sizing the sorting buffer.

Please replace paragraph [0031] with the following amended paragraph:

[0031] The effects that a sorting buffer having a predetermined maximum number of available spaces has on the faithfulness-to-position are preferably determined by the simulations. When an order is selected after having been moved up to the first position in the selection sequence, it is then faithful-to-position upon reaching the second subprocess. If it becomes necessary to defer the order and place it in the buffer memory, it reaches the second

subprocess too late, because the first production object of the production-object sequence does not match, so that it is not possible to move up a matching production object to the first position. When an order is selected, even though it is not yet the first order of the order sequence, it then reaches the second subprocess too early. This can only happen when another order had been deferred and placed in the buffer memory. For that reason, the degree of faithfulness-to-position, i.e., the proportion of orders in the total number of orders of the order sequence that are faithful-to-position, is used as a quantifiable and measurable measure of the effects of a sorting buffer having a specified maximum number of available spaces. It is self-evident that the degree of faithfulness-to-position increases, the greater the maximum number of available spaces in the sorting buffer. This is because the more free spaces the sorting buffer has, the fewer the number of orders that need to be deferred due to a lack of free spaces which would prevent a matching production object from being moved up to the first position. Therefore, the degree of faithfulness-to-position for the reference sequence is preferably determined in the simulations.

Please add the following new heading before paragraph [0033]:

BRIEF DESCRIPTION OF THE DRAWINGS

Please add the following new heading before paragraph [0045]:

DETAILED DESCRIPTION

Please replace paragraph [0059] with the following amended paragraph:

[0059] At least one additional sorting buffer is preferably provided for subsystems produced on the basis of the order sequence and installed downstream of order penetration point 300. A subsystem of this kind is placed in a sorting buffer for subsystems, when the production object into which the subsystem is to be installed, arrives at the installation location later than scheduled. Figure 1 shows a sorting buffer 500.6 for subsystems that are installed in subprocess 100.5.

Please replace paragraph [0095] with the following amended paragraph:

[0095] When an order in the buffer memory reaches the dwell-time limit, the attempt is made to find a matching production object for this order. In the case that the first matching production

object is not the first of the production-object sequence, then the production objects upstream of the first matching are searched through.

Please replace paragraph [0102] with the following amended paragraph:

[0102] The next order 10.3 in copy 60 or order sequence 70 is first compared to the two production objects in sorting buffer 500.3 at point in time T_2 = T_0 + 2*T. Order 10.3 does not match production object 20.2, because order 10.3 specifies a motor vehicle without a sun roof, whereas production object ~~20.3~~ 20.2 is a motor vehicle with a sun roof. On the other hand, order 10.3 matches production object ~~20.2~~ 20.3. Therefore, these two are selected. Production object ~~20.2~~ 20.3 is removed from the sorting buffer, delivered to subprocess 100.3, and processed in the same in accordance with order 10.3.

Please amend the heading on top of page 45 with the following amended heading:

~~Patent claims~~ WHAT IS CLAIMED IS: